

L Number	Hits	Search Text	DB	Time stamp
2	114	((501/5) or (501/15) or (501/17) or (501/21) or (501/72)).CCLS.) and ((sio or sio2 or "sio.sub.2" or silicon or silica or si) same (baria or ba or bao or barium) same (magnesium or magnesia or mg or mgo))	USOCR	2002/09/21 14:22
1	125	((501/5) or (501/15) or (501/17) or (501/21) or (501/72)).CCLS.) and ((sio or sio2 or "sio.sub.2" or silicon or silica or si) and (baria or ba or bao or barium) and (magnesium or magnesia or mg or mgo))	USOCR	2002/09/21 14:41
3	1300	forsterite	USPAT; US-PGPUB	2002/09/21 14:41
4	119	((501/5) or (501/15) or (501/17) or (501/21) or (501/72)).CCLS.) and ((sio or sio2 or "sio.sub.2" or silicon or silica or si) and (baria or ba or bao or barium) and (magnesium or magnesia or mg or mgo)).ti,ab.	USPAT; US-PGPUB	2002/09/21 14:41
5	536230	sio or sio2 or "sio.sub.2" or silicon or silica or si	USPAT; US-PGPUB	2002/09/21 14:56
6	111185	baria or ba or bao or barium	USPAT; US-PGPUB	2002/09/21 14:56
7	355835	magnesium or magnesia or mg or mgo	USPAT; US-PGPUB	2002/09/21 14:56
8	73	(sio or sio2 or "sio.sub.2" or silicon or silica or si ) same (baria or ba or bao or barium ) same (magnesium or magnesia or mg or mgo ) same forsterite	USPAT; US-PGPUB	2002/09/21 14:42
9	535105	glass or glasses or frit or frits or enamel or enamels or glaze or glazes	USPAT; US-PGPUB	2002/09/21 14:43
10	44	((sio or sio2 or "sio.sub.2" or silicon or silica or si ) same (baria or ba or bao or barium ) same (magnesium or magnesia or mg or mgo ) same forsterite) same (glass or glasses or frit or frits or enamel or enamels or glaze or glazes)	USPAT; US-PGPUB	2002/09/21 14:52
11	28487	sofc or (fuel adj cell)	EPO; JPO; DERWENT	2002/09/21 14:55
12	638026	seal or sealant or sealing	EPO; JPO; DERWENT	2002/09/21 14:55
13	585941	glass or glaze or enamel or frit	EPO; JPO; DERWENT	2002/09/21 14:56
14	305715	baria or ba or bao or barium	EPO; JPO; DERWENT	2002/09/21 14:56
15	525688	magnesium or magnesia or mg or mgo	EPO; JPO; DERWENT	2002/09/21 14:56
16	1187970	sio or sio2 or "sio.sub.2" or silicon or silica or si	EPO; JPO; DERWENT	2002/09/21 14:56
17	48	(sofc or (fuel adj cell) ) with (seal or sealant or sealing ) and (baria or ba or bao or barium ) and (magnesium or magnesia or mg or mgo ) and (sio or sio2 or "sio.sub.2" or silicon or silica or si )	EPO; JPO; DERWENT	2002/09/21 14:57
-	1489	((501/5) or (501/15) or (501/17) or (501/21) or (501/72)).CCLS.	USPAT; US-PGPUB	2002/09/21 13:46
-	536230	sio or sio2 or "sio.sub.2" or silicon or silica or si	USPAT; US-PGPUB	2002/09/21 14:41
-	111185	baria or ba or bao or barium	USPAT; US-PGPUB	2002/09/21 14:41
-	355835	magnesium or magnesia or mg or mgo	USPAT; US-PGPUB	2002/09/21 14:41
-	119	((501/5) or (501/15) or (501/17) or (501/21) or (501/72)).CCLS.) and ((sio or sio2 or "sio.sub.2" or silicon or silica or si) and (baria or ba or bao or barium) and (magnesium or magnesia or mg or mgo)).ti,ab.	USPAT; US-PGPUB	2002/09/21 14:41

DERWENT-ACC-NO: 2000-401983

DERWENT-WEEK: 200035

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TITLE: Glass composition used as high temperature sealing material for fuel

cells comprises glass matrix containing components consisting of silica, alumina and Group I and/or II metal oxides filled with specified refractive components

INVENTOR-NAME: BAGGER, C; LARSEN, J G ; LARSEN, P H

PRIORITY-DATA: 1998US-112039P (December 15, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
PAGES	MAIN-IPC	
EP 1010675 A1	June 21, 2000	E
010	C03C 008/24	
JP 2000235862	August 29, 2000	N/A
006	H01M 008/02	
A		

INT-CL (IPC): C03C008/14; C03C008/24 ; H01M008/02 ; H01M008/12

ABSTRACTED-PUB-NO: EP 1010675A

BASIC-ABSTRACT: NOVELTY - The filler material is evenly dispersed in the matrix and consists of particles of one or more refractive compounds selected from the group: MgO-MgAl<sub>2</sub>O<sub>4</sub>, stabilized zirconia, rare earth oxides, (Mg,Ca)SiO<sub>3</sub>, Mg<sub>2</sub>SiO<sub>4</sub>, MgSiO<sub>3</sub>, CaSiO<sub>3</sub>, CaZrO<sub>3</sub>, ThO<sub>2</sub>, TiO<sub>2</sub> and MIIAlSi<sub>2</sub>O<sub>8</sub>, where MII = Ca, Sr or Ba.

DETAILED DESCRIPTION - Preferably, the glass matrix contains Al<sub>2</sub>O<sub>3</sub> and Na<sub>2</sub>O, where the stoichiometric molar ratio Al<sub>2</sub>O<sub>3</sub>:Na<sub>2</sub>O = 0.1-1.3, or Al<sub>2</sub>O<sub>3</sub> and K<sub>2</sub>O, where the stoichiometric molar ratio Al<sub>2</sub>O<sub>3</sub>:K<sub>2</sub>O = 0.1-1.3, and the composition includes fluorine atoms as partial crystallizer forming a glass ceramic. Additionally, 0.1-10% of B<sub>2</sub>O<sub>3</sub> is included in the glass

composition.

INDEPENDENT CLAIMS are given for:

(i) use of glass compositions for sealing fuel cells operating at temperatures up to 1000 deg. C, with main components comprising:

(a) silica, alumina and Group I metal oxides; or

(b) silica, alumina and Group II metal oxides; and

(ii) use of a glass composition where  $\text{Li}_2\text{Si}_2\text{O}_5$  may be used as a filler at temperatures up to 1000 deg. C and other alkali silicates at lower temperatures.

USE - Sealing material for fuel cells, especially solid oxide fuel cells.

ADVANTAGE - The filler material adjusts the thermal expansion coefficient of the sealing glass so that it matches the thermal expansion coefficient of other parts of the fuel cell. In addition, the stability of the glass may be improved and its viscosity is increased.